

Patent
Serial No. 10/798,477
Avago Docket No. 70030733-1

REMARKS

Remaining Claims

Claim 1 has been amended. Twenty (20) claims (claims 1-20) remain pending in this application through this Amendment. The Applicants respectfully request reconsideration in view of the amendments and remarks. As the amendments are believed to place the application in condition for allowance or, alternatively, in better form for consideration on appeal, entry of this Amendment is believed proper under 37 CFR § 1.116.

Rejection of Claims 1-20 under 35 USC §102(e) – Reeh

Claims 1-20 stand rejected under 35 U.S.C. §102(e) as being anticipated by *Reeh* (U.S. Patent No. 6,576,930 to Reeh, et al.). Applicants have amended claim 1 to emphasize the intent of the amendment made in the Response and Amendment filed in response to the previous Office Action but otherwise respectfully traverse the rejection.

With regard to independent claim 1 and the claims that depend therefrom, *Reeh* discloses a system that emits polychromatic light by combining the light of a first wavelength emitted directly from the LED with light emitted from the LED and converted to a second wavelength by the conversion element (overlay). (See, e.g., Abstract.) In contrast, in accordance with one feature of Applicants' invention, monochromatic light can be emitted by selecting a combination of LED and fluorescent material overlay that ensures substantially all of the light emitted by the LED is converted to another wavelength. This can be assured, for example, by having the fluorescent material overlay layer be of a thickness sufficient to prevent light emitted by the LED from passing through unconverted. (See specification, p. 3, line 29 – p. 4, line 22.) Applicants had previously amended claim 1 to emphasize this feature of the invention.

The Examiner states that the limitation relating to conversion of substantially all of the light emitted by the LED has not been given patentable weight and points out that "apparatus claims must be distinguished from the prior art in terms of structure rather than function," citing MPEP § 2114. Applicants

Patent
Serial No. 10/798,477
Avago Docket No. 70030733-1

appreciate the Examiner's position and that claiming an apparatus in structural terms is preferable to claiming it in functional terms. Accordingly, Applicants have amended claim 1 slightly to note that it is the thickness of the conversion layer overlay that is the major factor in determining the proportion of light emitted by the LED that is converted to that which passes through unconverted. (See specification, p. 3, line 29 – p. 4, line 22.) A sufficiently thick overlay layer will convert substantially all of the light emitted by the LED, and essentially none will pass through unconverted. Thickness is a structural limitation. In amending the claims in response to the previous Office Action, Applicants believed that thickness was implicated, as varying the thickness is the way that is described in Applicants' specification for achieving the desired proportion of conversion to non-conversion. The present amendment to explicitly recite that thickness is the factor was previously believed superfluous and unnecessary and therefore could not have been earlier presented; accordingly, the amendment should be entered and the claims re-considered under 37 CFR § 116(b), with the limitation being given its proper patentable weight.

Applicants also respectfully submit that it is not entirely improper to claim elements of an apparatus using functional language and that the Examiner must afford weight to those claim limitations. In fact, MPEP § 2114 supports this, citing *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997): "While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function." (emphasis added). In *In re Schreiber*, the structure, apparently claimed in functional terms, was found to be inherent in the prior art reference. Nevertheless, the point is that in many instances it is not improper to claim structural limitations in functional terms, and the caselaw cited in the MPEP acknowledges this. In the present instance, the thickness of the overlay conversion layer was claimed in terms of its ability to convert substantially all of the light emitted from the LED.

Reeh does not disclose anything about the thickness of the conversion layer and in fact discloses that polychromatic light is emitted by combining the

Patent
Serial No. 10/798,477
Avago Docket No. 70030733-1

light emitted directly from the LED with light emitted from the LED and converted to a second wavelength by the conversion element (overlay). In other words, some light escapes unconverted. The light is not substantially fully converted, and *Reeh* does not anticipate claims 1-7. Reconsideration and withdrawal of this rejection is respectfully requested.

With regard to independent claim 8 and the claims that depend therefrom, *Reeh* does not teach or suggest that only a portion of the area of the overlay layer contains light-converting fluorescent material. The Examiner states: "Figure 3 of *Reeh* shows the overlay (glass covering 29 in combination with conversion layer 4) with only a portion (4) containing the fluorescent material." The Applicants respectfully point out that the portion (4) shown in Figure 3 of *Reeh* covers the entire area of the overlay. In contrast, Applicants' claims, which recite "a fluorescent material overlay having an area and including a layer of fluorescent material disposed over only a portion of the area, wherein another portion of the area does not have any fluorescent material" do not read on Figure 3 of *Reeh*. As the word is commonly understood, an "area" is a bounded region, which can be measured in square units (e.g., square millimeters, etc.). Claim 8 recites that the overlay has an area, i.e., the region bounded by the perimeter of the overlay. Claim 8 further recites that some portion of that area does not have fluorescent material and some other portion does. Figure 3 of *Reeh* clearly indicates (with speckling or shading) that the fluorescent material is distributed throughout the area labeled "4". The area labeled "4" is coextensive with the glass covering, which together define the "overlay." In summary, the Examiner does not appear to acknowledge that the relevant limitations recited in claim 8 are tied to the overlay's area. While *Reeh* may disclose that the region labeled "4" has fluorescent material but the glass that covers it does not, these are coextensive areas, not portions or regions of the same area.

For at least this reason, Applicants believe claim 8 and claims 9-13, which depend from claim 8, are not anticipated by *Reeh*. Reconsideration and withdrawal of this rejection is respectfully requested.

Patent
Serial No. 10/798,477
Avago Docket No. 70030733-1

With regard to independent claim 14, the Examiner points out that in the "Background of the Invention" section *Reeh* notes that LEDs can be used in motor vehicle dashboards, aircraft, and so forth. (Col. 1., lines 55-60.) It is known that multi-segment LED displays or similar devices have been used for displaying, for example, vehicle speed in automobiles. Nevertheless, the statement is found in the Background section only. *Reeh* does not state that the invention shown in Figure 3 or other drawing figures can comprise multiple segments such that there would be a plurality of cavities formed within a plurality of walls on a single substrate, where each cavity contains an LED, and with an overlay of the type recited.

Indeed, it is reasonable to believe a multi-segment LED arrangement could be assembled from multiple substrates, each having its own cavity, rather than a single or unitary substrate having multiple cavities, as recited in claim 14; there is nothing in *Reeh* that suggests the latter arrangement. Moreover, nothing in *Reeh* suggests using a single overlay "at a top end of the plurality of cavities," as recited in claim 14. In other words, the overlay is on top of all of the cavities. Figure 3 of *Reeh* shows only a single cavity ("9") and a single LED ("1"), and nothing in the Background section of *Reeh* can properly be read to suggest otherwise. For at least this reason, Applicants believe claim 14 and claims 15-20, which depend from claim 14, are not anticipated by *Reeh*. Reconsideration and withdrawal of this rejection is respectfully requested.

In addition, with regard to claim 20, Applicants respectfully disagree that *Reeh* shows each of a plurality of cavities having an overlay with a different type of fluorescent material from the other cavities. The Examiner cites col. 6, lines 57-66, which states that "[a] particularly preferred material for the production of the luminescence conversion element is epoxy resin, to which one or more luminescent materials are added." This statement suggests only that the material within a single cavity may comprise a mixture of more than one luminescent material. It does not suggest that a first cavity can have a first luminescent material, a second cavity can have a second luminescent material, etc., (let alone with one overlay on top of all of them, as recited in claim 14, from


Patent
Serial No. 10/798,477
Avago Docket No. 70030733-1

which claim 20 depends) so as to form a unitary structure that emits different wavelengths from different portions of it. For example, there can be a multi-segment display (with a single overlay on top of all the segments) in which each segment emits a different color. Nowhere in *Reeh* is such a feature taught or suggested. Moreover, as discussed above with regard to claim 14, from which claim 20 depends, *Reeh* does not even disclose a device having such a plurality of cavities. For at least this additional reason, Applicants believe claim 20 is not anticipated by *Reeh*. Reconsideration and withdrawal of this rejection is respectfully requested.

CONCLUSION

In view of the foregoing, the Applicant respectfully requests entry of this Amendment under 37 CFR § 116(b)-(c) and allowance of the application. Should there be any further questions or concerns, the Examiner is urged to telephone the undersigned.

Respectfully submitted,
GARDNER GROFF, P.C.



Lawrence D. Maxwell
Reg. No. 35,276

GARDNER GROFF SANTOS & GREENWALD, P.C.
Customer No. 47627

2018 Powers Ferry Road, Suite 800
Atlanta, Georgia 30339
Phone: 770.984.2300
Fax: 770.984.0098